PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 20023WO	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/NL 03/00755	International filing date *(day/month/year)* 31.10.2003	Priority date *(day/month/year)* 01.11.2002
International Patent Classification (IPC) or both national classification and IPC B29C70/20		
Applicant DSM IP Assets B.V.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
13.05.2004	01.02.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Van Wallene, A Telephone No. +31 70 340-3611

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL 03/00755

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-8 as originally filed

Claims, Numbers

1-6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-6
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document:

D1: WO 97/00766 A (DSM NV ;LOO LEONARDUS LAMBERTUS HENRIC (NL)) 9 January 1997 (1997-01-09)

Novelty

The document D1 is regarded as being the closest prior art to the subject-matter of claims 1 and 5, and shows (the references in parentheses applying to this document):

Process for the manufacture of a ballistic-resistant moulded article in which a stack of rnonolayers is formed, each monolayer containing unidirectionally oriented reinforcing fibres and at most 30 mass% of a plastic matrix material, the reinforcing fibres being highly-drawn polyethylene fibres, and with the fibre direction in each monolayer being rotated with respect to the fibre direction in an adjacent monolayer, the stack then being compressed at elevated temperature at a given compression pressure.
The subject-matter of claim 1 differs from this known process in that the plastic matrix material has a 100% modulus of at least 3 MPa and the stack is compressed at a pressure of more than 25 MPa and a temperature between 125 and 150 °C.

Document D1, which is considered to represent the most relevant state of the art, discloses furthermore a ballistic-resistant moulded article comprising a stack of monolayers, each monolayer containing unidirectionally oriented reinforcing fibres and at most 30 mass % of a plastic matrix material, the reinforcing fibres being highly-drawn polyethylene fibres, and with the fibre direction in each monolayer being rotated with respect to the fibre direction in an adjacent monolayer,
from which the subject-matter of claim 5 differs in that the plastic matrix material contains polyurethane and the moulded article has an SEA at against AK47 bullets that is at least 100 J/(kg/m^2).

The subject-matter of claims 1 and 5 is therefore new (Article 33(2) PCT).

Inventive Step

The problem to be solved by the present invention may be regarded as insufficient bullet proof properties of the prior art ballistic-resistant moulded articles.

The solution to this problem proposed in claim 1 and 5 of the present application is considered as involving an inventive step (Article 33(3) PCT) because the added characterising features further improve the ballistic resistance without being disclosed or hinted at in the prior art.

Claims 2 to 4 and 6 are dependent on claims 1 and 5 respectively and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Industrial Applicability

The claimed subject matter is considered to be industrially applicable and thus fulfilling the requirements of article 33(4) PCT.